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ABSTRACT

This study addressed two questions: (1) Can homogeneous groups of teachers be created based upon instructional preferences? and (2) If so, can those groups be differentiated by the teachers' role-ideals and their philosophical orientations? The focus was on how teachers want to teach rather than how they feel they ought to teach in their individual teaching situations. The subjects of the study were 127 elementary school teachers, 106 secondary school teachers, and two teachers who taught at both levels. The median number of years of teaching experience was 5.6 years. Each teacher responded to three questionnaires which tested: (1) their preferences for sixteen conceptual models of teaching; (2) how well each of 24 adjectives describe an ideal teacher: and (3) philosophical beliefs by rating the teachers' strength of agreement with each of 44 statements on educational theories. The analysis of results showed that homogeneous groups of teachers can be created based on instructional preferences, and that teachers role-ideals and preferences for educational philosophies are related to their preferences for conceptual models for teaching. Implications of these findings are discussed, and a detailed analysis of the methodology with supporting tables, as well as a list of references, is included. (FG)

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Teacher Thought Regarding Instructional Preferences

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There is much more conjecture than hard evidence regarding how teachers view models of teaching or which variables are associated with teachers' preferences for various models of teaching. As Joyce (1978) notes, "there have been relatively few investigations of the thinking patterns of teachers." This situation is noteworthy, because teachers' preferences for various models of teaching clearly represent a pivotal aspect of classroom phenomena.

The literature currently reflects a strong emphasis on using interaction analysis as a data base for most investigations. This approach is appropriate for determining which teacher behaviors are related to student achievement, but for two reasons these data will not support inquiry regarding teachers' instructional preferences. First, the level of data collected by the analyses may have limited psychological meaning for teachers. Although low-inference measures such as counts of teacher questions may be reliable, there is no evidence that teachers can even attend to most interactions at this level of specificity. Too many situational demands compete for attention in the classroom. Thus research (cf. Moskowitz, 1967) indicates that teacher effectiveness can be improved by providing teachers with interaction feedback; this feedback would probably be less helpful if teachers could readily attend to minute behaviors without the assistance of feedback.

Some researchers also inappropriately assume that teachers have unrestricted freedom to select instructional approaches and that consequently behaviors merely reflect preferences. But as Joyce (1969) indicates, teachers must cope with a complex amalgam of social and institutional needs when teaching. Schools as institutions also experience pressures to insure that teachers are effective. Thus teachers may choose or be required to select their instructional approaches from among more conventional methods, because if desired outcomes are not realized the burden of failure can be more readily shared with the institutions which legitimized the methods. Certainly the amount of academic freedom which teachers enjoy is situation-specific, but few teachers have unrestricted freedom.

This study was conducted in a manner which hopefully avoided these pitfalls. The study examined teacher preferences for global models of teaching rather than preferences for highly specific behaviors. Since the study sought to promote understanding of how teachers perceive instructional models, the study focused on how teachers want to teach rather than upon how teachers feel they ought to teach in their individual teaching situations. Specifically, the study addressed two questions: can homogeneous clusters of teachers be created based upon instructional preferences, and can preference clusters be differentiated by the teachers' role-ideals and their philosophical orientations? The answers to both these questions would have some noteworthy implications.

Knowledge about "types" of teachers classified according to their preferences may facilitate research on teacher effectiveness. Notwithstanding some more optimistic interpretations (Gage, 1978), it is clear that we know relatively little about what makes teachers effective. As Medley (1977, p. 1) recently noted in a review of several hundred teacher effectiveness studies, "efforts to develop performance-based programs for educating and certifying teachers have made it painfully clear just how inadequate the [knowledge] base is." However, Soar (1978) has suggested that research might be more productive if researchers examined correlates of effectiveness within homogeneous groups of teachers. This strategy would provide more specific information regarding in which situations the relationships obtain and would clarify the nature of the relationships.

Knowledge about which variables are associated with teachers' instructional preferences is also important. Efforts to train teachers to implement various models of teaching must take into account the dynamics of the judgment process. Preservice and inservice training which does not consider the psychology of the trainees may be less than optimally effective. Two sets of constructs may reasonably be expected to be associated with teachers' instructional preferences.

"Role-ideals" refer to the characteristics which are ascribed to "target persons" (Thomas & Biddle, 1966). In this case, role-ideals consist of characteristics which teachers believe describe ideal teachers. As Gross and Stone (1964, p. 1) indicate, "in social transactions... persons must announce who they are." In a sense, ideals are ends while models of teaching are means of actualizing ideals. Thus, teachers may "announce who they are" by expressing preferences for models of teaching which in turn themselves communicate ideals. Ideals and instructional preferences will tend to be consonant because persons tend to be consistent in such matters (Albert, 1977); this is probably especially true when "vital roles" (Perlman, 1968, p. 43) or career-related ideals are involved. Furthermore, many teachers are aware that students "will reject teachers whom they perceive to be inconsistent-- i.e., individual teachers... who present conflicting sets of educational ideology and teaching strategies" (Nier, 1975, p. 31).

Philosophical preferences should also be associated with teachers' instructional method preferences. As Joyce and Weil (1972, p. 5) suggest, "educational procedures are generated from general views about human nature and about the kinds of goals and environments that enhance human beings." Therefore preferences for various conceptual models of teaching should be related to philosophical preferences, because philosophies reflect personal value judgments regarding the proper ends of

education, and instructional preferences are judgments about which outcomes to emphasize and which methods are ethical.

Method

Subjects

The subjects were 235 currently employed teachers. The subjects were sampled from the population of employed teachers and not the more restricted population of teachers who happened to be enrolled in graduate school. Of the 235 subjects, 127 subjects taught at the elementary school level, 106 subjects taught at the secondary school level, and two subjects taught at both levels. The median number of years of teaching experience was 5.6 years.

Instrumentation

Preference for models of teaching was measured by asking the teachers to rate how strongly they preferred summaries of each of 16 conceptual models of teaching. The summaries each consisted of a brief paragraph presenting the essential elements of each of the 15 models of teaching discussed by Joyce and Weil (1972), or the lecture method of teaching. Table 1 briefly describes each model. The validity of the instrument was examined in a previous study reported by Jones, Thompson, and Miller (1980). In the study reported here the teachers rated each summary by marking through an unbroken line drawn between the extremes of a semantic-differential scale, "dislike-like."

Table 1

Models of Teaching Descriptions

Model	Theorist	Basic Focus
Classroom Meeting	Glasser	Emphasis on self-understanding
Awareness Training	Schultz & Perls	Increase awareness of self and others
Developmental	Piaget, Sigel & Sullivan	Increase general intellectual development, especially reasoning
Laboratory Method	National Training Laboratory	Train to cope via encounter-like strategies
BSCS	Schwab	Teach modes of inquiry used in academic disciplines
Synectics	Gordon	Develop creative skills
Inquiry Training	Suchman	Teach theory building skills
Advance Organizer	Ausebel	Increase efficiency of information processing
Jurisprudential	Oliver & Shaver	Evaluate ideas in a judicial-type atmosphere
Inductive	Taba	Teach inductive mental processes
Social Inquiry	Massialas & Cox	Emphasis on mutual participation in inquiry into nature of society and its problems
Lecture [a]	---	Presentation by teacher to students
Non-directive	Rogers	Develop self-understanding, self-concept
Group Investigation	Thelen & Dewey	Combined emphasis on social skills and academic inquiry
Operant Conditioning	Skinner	Shape learning using reinforcement schedules
Concept Attainment	Bruner	Teach nature of concepts and conceptual thought

[a]Not a Joyce-Weil model of teaching

The characteristics each teacher believed an ideal teacher should possess were measured by using the Multiple Teacher Factors (MTF) Survey (Miller, Thompson, & Frankiewicz, 1975). The Survey asks subjects to rate how well each of 24 adjectives decribe teachers whom subjects consider to be ideal. The instrument produces factor scores on four scales: attributes of teacher warmth, attributes of teacher scholarliness, attributes of teacher rigor, and attributes of teacher potency. The instrument has performed stably in several studies, including studies by Thompson and Miller (1978) and Brown (1977, 1978, 1979).

Philosophical beliefs were measured by using the Educational Philosophy Index (EPI). Evidence regarding the construct validity of the EPI is presented by Miller and Thompson (1979). The instrument asks teachers to rate how strongly they agree with each of 44 statements. The instrument produces a factor score on each of six scales: Essentialism, Humanism, Perennialism, Progressivism, Rationalism, and Existentialism. In short, the EPI measures philosophical preferences as preferences for what Kneller (1971, p. 41) terms educational theories. He explains that "although these theories tend to flow from formal philosophies, they take on a special character because they are conditioned largely by experiences unique to education."

Results

The data from the ratings of the 16 summaries of the models of teaching were factor analyzed. All factors with eigenvalues greater than 1.0 were extracted from the correlation matrix and then rotated to the varimax criterion. The four extracted factors accounted for 52.0 percent of the variance in the ratings. The resultant factor pattern and communality coefficients are presented in Table 2.

The first factor included summaries of the Group investigation, Social Inquiry, Jurisprudential, Non-directive, Concept Attainment, and Inquiry Training models of teaching. The factor encompassed models of teaching which involve inquiry strategies. The second factor included summaries of the BSCS, Synectics, Advance Organizer, Inquiry Training, and Inductive models of teaching. The factor appears to involve models of teaching which emphasize incisive understanding of a discipline or instructional content. The third factor included summaries of the Awareness Training, Classroom Meeting, Laboratory Method, Developmental, and Non-directive models of teaching. The factor appears to involve models of teaching which have an affective orientation. The fourth factor includes summaries of the lecture, Operant Conditioning, Advance Organizer, and Concept Attainment models of teaching. The factor appears to involve models of teaching which emphasize a highly structured environment.

Table 2

Factor Pattern Coefficients

Summary	I	II	III	IV	h^2
Classroom Meeting	.06	.09	.67	.14	.48
Awareness Training	-.02	.16	.72	.10	.56
Developmental	.39	.10	.50	-.03	.41
Laboratory Method	.39	.11	.58	.00	.50
BSCS	.12	.71	.08	-.12	.54
Synectics	.34	.63	.21	-.02	.55
Inquiry Training	.55	.39	.26	-.19	.55
Advance Organizer	-.03	.58	.17	.45	.56
Jurisprudential	.50	.34	.24	-.12	.44
Inductive	.60	.38	-.16	.16	.56
Social Inquiry	.68	.20	.16	.04	.52
Lecture	-.05	.04	.02	.72	.52
Non-directive	.50	-.32	.41	-.01	.53
Group Investigation	.68	.10	.14	.07	.50
Operant Conditioning	.22	-.11	.13	.71	.59
Concept Attainment	.59	-.14	.05	.38	.51

Standardized factor scores were then calculated and were used to assign the subjects to groups which were homogeneous in terms of preferences for summaries of conceptual models of teaching. When standardized scores are also normally distributed, approximately two-thirds of the scores fall between the values of -1.0 and +1.0. For the purpose of grouping the subjects, subjects who had a factor score greater than +1.0 on a summaries factor were considered to particularly like or prefer the summaries which defined the factor. Subjects who had a factor score less than -1.0 on a models of teaching factor were considered to particularly dislike the models of teaching which defined the factor. This procedure has been suggested by Korb and Frankiewicz (1976). All possible combinations of preference patterns are presented in Table 3; the numbers of subjects assigned to the preference groups are also reported in the table. The group labels are arbitrary.

Earlier it was suggested from a theoretical perspective that teachers' role-ideals and preferences for educational philosophies should help define and differentiate homogeneous preference groups. In order to test this expectation, a discriminant analysis was conducted to determine if a combination of role-ideals and philosophy variables could indeed be used to differentiate (α=.05) the identified preference groups. Unfortuantely, the 235 subjects were distributed across 52 of the 81 preference groups presented in Table 3. In this case the number of degrees of freedom required to assess the

Table 3

Preference Groups

Preference Type	Group	Pattern	n	Sub Total
Some strong preferences, all positive	*AA	P-I O-II O-III O-IV	7	
	*AC	O-I P-II O-III O-IV	10	
	*AE	O-I O-II P-III O-IV	8	
	*AG	O-I O-II O-III P-IV	17	
	AI	P-I P-II O-III O-IV	2	
	AJ	P-I O-II P-III O-IV	3	
	AK	P-I O-II O-III P-IV	3	
	AL	O-I P-II P-III O-IV	4	
	AM	O-I P-II O-III P-IV	2	
	AN	O-I O-II P-III P-IV	1	
	AO	P-I P-II P-III O-IV	1	
	AP	P-I P-II O-III P-IV	0	
	AQ	P-I O-II P-III P-IV	3	
	AR	O-I P-II P-III P-IV	0	
	AS	P-I P-II P-III P-IV	1	62
Some strong preferences, mixed	AT	P-I N-II O-III O-IV	2	
	AU	N-I P-II O-III O-IV	2	
	AV	P-I O-II N-III O-IV	4	
	AW	N-I O-II P-III O-IV	0	
	AX	P-I O-II O-III N-IV	1	
	AY	N-I O-II O-III P-IV	4	
	AZ	O-I P-II N-III O-IV	5	
	BA	O-I N-II P-III O-IV	2	
	BB	O-I P-II O-III N-IV	2	
	BC	O-I N-II O-III P-IV	1	
	BD	O-I O-II P-III N-IV	5	
	BE	O-I O-II N-III P-IV	2	
	BF	P-I P-II N-III O-IV	0	
	BG	P-I N-II P-III O-IV	0	
	BH	N-I P-II P-III O-IV	0	
	BI	P-I N-II N-III O-IV	0	
	BJ	N-I P-II N-III O-IV	1	
	BK	N-I N-II P-III O-IV	1	
	BL	P-I P-II O-III N-IV	0	
	BM	P-I N-II O-III P-IV	0	
	BN	N-I P-II O-III P-IV	1	
	BO	P-I N-II O-III N-IV	1	
	BP	N-I P-II O-III N-IV	0	
	BQ	N-I N-II O-III P-IV	0	
	BR	P-I O-II P-III N-IV	0	
	BS	P-I O-II N-III P-IV	1	
	BT	N-I O-II P-III P-IV	2	
	BU	P-I O-II N-III N-IV	0	

Table 3 (Cont.)

	BV	N-I	O-II	P-III	N-IV	1	
	BW	N-I	O-II	N-III	P-IV	0	
	BX	O-I	P-II	P-III	N-IV	1	
	BY	O-I	P-II	N-III	P-IV	2	
	BZ	O-I	N-II	P-III	P-IV	1	
	CA	O-I	P-II	N-III	N-IV	2	
	CB	O-I	N-II	P-III	N-IV	0	
	CC	O-I	N-II	N-III	P-IV	1	
	CD	P-I	P-II	P-III	N-IV	0	
	CE	P-I	P-II	N-III	P-IV	0	
	CF	P-I	N-II	P-III	P-IV	1	
	CG	N-I	P-II	P-III	P-IV	0	
	CH	P-I	P-II	N-III	N-IV	0	
	CI	P-I	N-II	P-III	N-IV	0	
	CJ	N-I	P-II	P-III	N-IV	1	
	CK	P-I	N-II	N-III	P-IV	0	
	CL	N-I	P-II	N-III	P-IV	0	
	CM	N-I	N-II	P-III	P-IV	0	
	CN	P-I	N-II	N-III	N-IV	0	
	CO	N-I	P-II	N-III	N-IV	0	
	CP	N-I	N-II	P-III	N-IV	0	
	CQ	N-I	N-II	N-III	P-IV	0	47
Some strong preferences, all negative	*AB	N-I	O-II	O-III	O-IV	10	
	*AD	O-I	N-II	O-III	O-IV	18	
	*AF	O-I	O-II	N-III	O-IV	7	
	*AH	O-I	O-II	O-III	N-IV	7	
	CR	N-I	N-II	O-III	O-IV	3	
	CS	N-I	O-II	N-III	O-IV	2	
	CT	N-I	O-II	O-III	N-IV	1	
	CU	O-I	N-II	N-III	O-IV	3	
	CV	O-I	N-II	O-III	N-IV	1	
	CW	O-I	O-II	N-III	N-IV	2	
	CX	N-I	N-II	N-III	O-IV	1	
	CY	N-I	N-II	O-III	N-IV	1	
	CZ	N-I	O-II	N-III	N-IV	0	
	DA	O-I	N-II	N-III	N-IV	0	
	DB	N-I	N-II	N-III	N-IV	1	57
	DC	O-I	O-II	O-III	O-IV	69	69

NOTE: "P"=positive attitude, "O"=neutral, "N"=negative attitude. Thus, for example, persons with the pattern, P-I O-II N-III O-IV, disliked third factor summaries, preferred first factor models, and were neutral toward the remaining models. Groups with asterisk prescripts were the 8 groups included in the discriminant analysis.

statistical significance of the first discriminant function would have been 510, i.e., (groups-1) X (independent variables) = (52-1)X(10). Thus, given the available sample size, it was apparent that not all the preference groups could be included in the analysis.

It was initially decided to exclude the largest preference group (DC, see Table 3) from the analysis. The largest preference group was composed of 69 subjects who each had relatively neutral preferences for each of the models of teaching factors. These subjects were excluded from the analysis in order to avoid interpretation difficulties that might otherwise have been introduced; there would have been no way to distinguish subjects who felt neutral from subjects who had preferences but whose preferences were not especially strong.

The next largest set of preference groups consisted of the eight groups (AA, AB, AC, AD, AE, AF, AG, AH; see Table 3) of subjects who expressed a strong preference or dislike for only one of the models of teaching factors. Of the 166 subjects who had strong preferences, 50.6 percent of these subjects were assigned to one of these eight preference groups. So, given the three considerations of degrees of freedom, the desire to avoid interpretation difficulties, and the homogeneous preferences expressed by these 84 subjects, these eight preference groups were selected for inclusion in the discriminant analysis. One

statistically significant (χ^2=94.82, df=70, p<.05) discriminant function was identified.

Statistical significance is a necessary condition for interpreting a discriminant function. However, an index of the proportion-of-variance group membership accounted for on the six EPI and the four MTF Survey factors is also important. Significance testing determines the likelihood that a given result would have been obtained if an entire population had been tested, assuming the null hypothesis to be true. The proportion-of-variance index helps to assess the educational significance of a result, given that the result occurred beyond a predetermined probability level. Tatsuoka (1970, p. 48) has suggested a multivariate analogue of eta squared that can be used for this purpose. In this case, 37.2 percent of the variance accruing on the 10 predictor variables was accounted for by knowledge of preference group membership. These results suggest that the variables can be employed successfully to differentiate the preference groups.

The standardized discriminant function and structure (Thompson & Frankiewicz, 1979) coefficients for the function are presented in Table 4. Structure coefficients indicate the correlation between each original variable and the function defined by the function coefficients. The centroids of the eight groups are presented in Table 5. The centroids indicate that the function primarily served to differentiate preference

Table 4

Discriminant Analysis Coefficients

Instrument	Factor	Function Coefficient	Structure Coefficient
EPI	Essentialism	.47	.52
	Humanism	.07	-.11
	Perennialism	.32	.46
	Progressivism	.14	.43
	Rationalism	.51	.62
	Existentialism	-.32	-.61
MTF	Caring	.31	.28
	Scholarly	.35	.50
	Exacting	-.09	.03
	Simple	-.40	-.64

Table 5

Group Centroids

Group	Pattern	Centroid
AA	P-I O-II O-III O-IV	-.51
AB	N-I O-II O-III O-IV	-.02
AC	O-I P-II O-III O-IV	1.47
AD	O-I N-II O-III O-IV	-.87
AE	O-I O-II P-III O-IV	.72
AF	O-I O-II N-III O-IV	.59
AG	O-I O-II O-III P-IV	-.10
AH	O-I O-II O-III N-IV	-.51

groups AC, AE, and AF from groups AD, AH, and AA. In other words, the function differentiated the teachers who 1) preferred the summaries defining the incisive understanding factor, or 2) preferred the summaries defining the affective orientation factor, or 3) disliked the summaries defining the affective orientation factor, from the teachers who 1) disliked the summaries defining the incisive understanding factor, or 2) disliked the summaries defining the structured environment factor, or 3) preferred the summaries defining the inquiry strategies factor. Teachers in groups AC, AE, and AF might be termed the "pro-incisive understanding, affect oriented" (pro or con) teachers. Teachers in groups AD, AH, and AA might be termed the "anti-incisive, anti-structure, pro-inquiry method" teachers.

Discussion

The first research question posed in the study was "can homogeneous clusters of teachers be created based upon instructional preferences?" It was previously suggested that this knowledge is important. The Table 3 results suggest that homogeneous clusters can be created based on preference information. Indeed, 84 (35.5%) of the subjects expressed especially strong preference regarding only one models of teaching factor. An additional 69 teachers (29.4%) did not express especially strong preferences or dislike for any of the conceptual models of teaching factors. These results indicate that the preponderance of teachers can readily be assigned to

homogeneous preference groups. Apparently most teachers' instructional preferences reflect a fairly "simple structure," i.e.-- teachers tend to have no especially strong preferences or to prefer strongly or dislike only one major category of methods.

The second research question posed in the study was "can preference clusters be differentiated by the teachers' role-ideals and philosophical orientations?" The results of the discriminant analysis indicate that teachers' role-ideals and preferences for educational philosophies are indeed related to teachers' preferences for conceptual models of teaching, as measured by preference for summaries describing the models. These results have several implications.

The structure coefficients presented in Table 4 indicate that the philosophy factors accounted for a sizeable proportion of the variance which differentiated the preference groups. This finding is somewhat surprising, because the summaries directly involve role behaviors and it might be expected that role-ideals should be more directly or intimately related to instructional preferences than philosophical preferences would be. This result suggests that educational philosophies, as specially defined in this study, may deserve more attention than they are typically afforded in most preservice and inservice teacher training programs. Certainly they apparently represent an important aspect of teacher thought.

The analysis also suggests that educators interpret educational phenomena primarily from within a basic skills perspective, although some teachers favor a basic skills emphasis while other teachers dislike this emphasis. The results of the discriminant analysis suggest that the basic skills element seems to permeate teacher thought regarding educational issues. The pro-basic skills teachers were the "pro-incisive understanding, affect oriented" teachers who according to the Table 4 structure coefficients indicated that schools should teach rational thinking, basic facts, and unchanging principles, and who emphasized the scholarly attributes of their ideal teachers. The anti-basic skills teachers were the "anti-incisive understanding, anti-structure, pro-inquiry" teachers who tended to agree with the tenets of Existentialism and ascribed characterstics of "simple-ness" to thier ideals. In other words, teachers in this second group are more process than product oriented and have somewhat less fundamentalist views.

In summary, the study was conducted to gain some insight into teacher thought regarding instructional preferences. Teachers' preferences for global methods of teaching have not been studied very extensively. Knowledge regarding "types" of teachers should facilitate more productive teacher effectiveness research. Of course, whether the "types" defined in this research will actually strengthen teacher effectiveness research is an empirical question which remains to be explored. The

study also indicated that role-ideals and philosophical preferences are systematically associated with teachers' instructional preferences, and that basic skills issues apparently establish a framework for teacher thought about various educational choices and issues. This information may be of some assistance to teacher educators who feel a need to base training programs upon perceptions of teacher thought.

References

Albert, S. Temporal comparison theory. Psychological Review, 1977, 84, 485-503.

Brown, R. The relationships among student evaluation of teaching, student achievement and student perception of teacher effectiveness. Fresno: California State University, 1977. (ERIC Document Reproduction Service No. ED 133 314)

Brown, R. Effects of perceived teacher-learner style congruency on teacher evaluation. Paper presented at the annual meeting of the American Educational Research Association, 1978.

Brown, R. Perceptions of teaching/learning style: The mediating process in student evaluation of instruction. CEDR Quarterly, 1979, 12, 16-18.

Gage, N.L. The yield of research on teaching. Phi Delta Kappan, 1978, 60, 229-235.

Gross, E., & Stone, G.P. Embarrassment and the analysis of role requirements. American Journal of Sociology, 1964, 70, 1-15.

Jones, H.L., Thompson, B., & Miller, A.H. How teachers perceive similarities and differences among various teaching models. Journal of Research in Science Teaching, 1980, 17, 321-326.

Joyce, B. Alternative models of elementary education. Waltham: Blaisdell, 1969.

Joyce, B. A problem of categories: Classifying approaches to teaching. Journal of Education, 1978, 160, 67-95.

Joyce, B., & Weil, M. Models of teaching. Englewood Cliffs: Prentice-Hall, 1972.

Kneller, G.F. Introduction to the philosophy of education (2nd ed.). New York: Wiley & Sons, 1971.

Korb, R., & Frankiewicz, R.G. Strategy for a priori selection of judges in a product-centered approach to assessment of creativity Perceptual and Motor Skills, 1976, 42, 107-115.

Medley, D.M. Teacher competence and teacher effectiveness: A review of process-product research. Washington, D.C.: American Association of College Teachers of Education, 1977. (ERIC Document Reproduction Service No. ED 143 629)

Miller, A.H., & Thompson, B. Dimensions of educational worldview. Paper presented at the annual meeting of the Southwest Educational Research Association, 1979.

Miller, A.H., Thompson, B., & Frankiewicz, R.G. Attitudes of teacher education students toward teachers. Paper presented at the annual meeting of the American Educational Research Association, 1975. (ERIC Document Reproduction Service No. 104 887)

Moskowitz, G. The attitudes and teaching patterns of cooperating teachers and student teachers trained in interaction analysis. In E.J. Amidon & J.B. Hough (Eds.), Interaction analysis: Theory, research and application. Reading, MA: Addison-Wesley, 1967.

Nier, C.J. Some relationships between psychological structure, educational beliefs, and teaching strategies in three types of teacher trainees. 1975. (ERIC Document Reproduction Service No. ED 132 143)

Perlman, H.H. Persona: Social role and personality. Chicago: University of Chicago Press, 1968.

Soar, R.S. Problems in analyzing process-product relationships in studies of teacher effectiveness. Journal of Education, 1978, 160, 96-116.

Tatsuoka, M.M. Discriminant analysis. Champaign, IL: Institute for Personality and Ability Testing, 1970.

Thomas, E.J., & Biddle, B.J. The nature and history of role theory. In B.J. Biddle & E.J. Thomas (Eds.), Role theory: Concepts and research. New York: Wiley & Sons, 1966.

Thompson, B., & Miller, A.H. Dissonance theory and education students' attitudes toward teachers. Journal of Experimental Education, 1978, 47, 55-59.

Thompson, B., & Frankiewicz, R.G. CANON: A computer program which produces canonical structure and index coefficients. Educational and Psychological Measurement, 1979, 39, 55-59.